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मानक

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Jawaharlal Nehru

“Step Out From the Old to the New”

IS 3906 (1995): Crop Protection Equipment - Hand-operated Knapsack Sprayer, Piston Type [FAD 21: Farm Implements and Machinery]



“ज्ञान से एक नये भारत का निर्माण”

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“Invent a New India Using Knowledge”



“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

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IS 3906 : 1995

(Reaffirmed 2001)

भारतीय मानक

फसल संरक्षण उपस्कर — हस्तचालित पीठ पर लादा जाने
वाला संपीडन फुहारा, पिस्टन टाईप — विशिष्ट
(चौथा पुनरीक्षण)

Indian Standard

**CROP PROTECTION EQUIPMENT —
HAND-OPERATED KNAPSACK SPRAYER,
PISTON TYPE — SPECIFICATION**

(Fourth Revision)

ISC 65-060-40

© BIS 1995

BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

December 1995

Price Group 5

FOREWORD

This Indian Standard (Fourth Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Crop Protection Equipment Sectional Committee had been approved by the Food and Agriculture Division Council.

This standard was first published in 1966 and subsequently revised in 1972, 1974 and 1982. The standard has been revised again to incorporate certain improvements found necessary in the light of the modifications suggested by the testing authorities and manufacturers. This revision incorporates among others the following:

- a) Amendment No. 1 to 3 issued to earlier version of the standard,
- b) Editorial changes including updating of referred standards,
- c) Material of construction are modified and requirement of chemical composition of brass casting components as per relevant Indian Standard is to ensure conformity,
- d) Provision for use of adjustable hydraulic spray nozzle,
- e) Order of testing,
- f) Provision for supplying cut-off device as per purchaser's requirements, and
- g) Test for piston made of synthetic rubber.

This standard was earlier published in two parts. With the withdrawal of IS 3906 (Part 2) : 1979 'Diaphragm type hand-operated knapsack sprayer', this revision has been published as single standard without any part.

The figures given in the standard are meant only for illustration of the components. These should not be considered as suggestive of any standard design.

In preparation of this revision, considerable assistance has been derived from the pest control equipment industry and the testing authorities.

For the guidance of the purchaser, Annex A has been compiled. Besides quoting the number of this standard, the details desired in the Annex may also be stated.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (revised)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

AMENDMENT NO. 1 MAY 2002
TO
IS 3906 : 1995 CROP PROTECTION EQUIPMENT —
HAND-OPERATED KNAPSACK SPRAYER, PISTON
TYPE — SPECIFICATION

(Fourth Revision)

(Page 5, clause 4.4) — Insert the following new clause after 4.4:

‘4.5 The engineering plastics used for manufacturing various components as given in Table 1 shall be either Acetal Co-polymer or Deldrive-P.’

[Page 6, Table 1, Sl No. (iv), col 3] — Insert ‘Engineering Plastics’ at the end.

[Page 6, Table 1, Sl No. (vi), col 3] — Insert ‘Engineering Plastics’ at the end.

[Page 6, Table 1, Sl No. (xvi), col 3] — Substitute ‘Plastics’ for ‘Engineering plastics’ and delete ‘Chrome tanned leather’

[Page 6, clause 4.1, Table 1, Sl No. (xvii), col 3] — Insert ‘Chrome tanned leather’ at the end.

(Page 6, clause 6.5) — Insert the following Note at the end of the text:

‘NOTE — The volumetric capacity of the pressure chamber from discharge outlet end upto the open end of dip tube shall be treated as an effective capacity. However, if dip tube has not been provided the total volumetric capacity of pressure chamber shall be treated as effective capacity.’

(Page 7, clause 6.9.1) — Insert the following at the end:

‘The gap between connecting lever and handle near pivot and near knapsack body shall not be less than 25 mm to prevent crushing of the fingers of the operator.’

(Page 7, clause 6.10) — Insert the following at the end:

‘Pivot pins for delivery outlet fitting with connecting rod shall be rivetted or with round headed nut and bolt.’

(*Page 7, clause 6.13*) — Insert the following text at the end:

‘Pivot pins for cut-off device shall be riveted or with round headed nut and bolt. The lever for cut-off device shall not have sharp edges.’

(*Page 8 , clause 7.3.4*) — Insert the following new clause after 7.3.4:

‘7.4 Mask, Hand Gloves and Safety Goggles

Each sprayer shall be provided with a set of mask, hand gloves and safety goggles.’

(FAD 59)

AMENDMENT NO. 2 JUNE 2010
TO
IS 3906 : 1995 CROP PROTECTION EQUIPMENT —
HAND-OPERATED KNAPSACK SPRAYER,
PISTON TYPE — SPECIFICATION
(Fourth Revision)

(Pages 1, and 5 to 8) — Delete year of publication against all IS Nos. wherever appearing in clause **3** onwards.

(Page 5, clause 4.3) — Delete.

[Page 5, clause 4.4 (see also Amendment No. 1)] — Renumber clause ‘**4.4**’ as ‘**4.3**’.

(Page 5, clause 5.2, line 3) — Substitute ‘85 percent’ for ‘80 percent’.

(Page 5, clause 6.2, line 2) — Substitute ‘6 mm’ for ‘12 mm’.

[Page 6, Table 1, col 3, Sl No. (i)] — Substitute ‘Brass, Plastic, Stainless steel’ for ‘Brass, Fibre glass reinforced plastic (FRP), HDPE, Stainless steel’.

[Page 6, Table 1, col 3, Sl No. (ii)] — Substitute ‘Brass, Plastic, Stainless steel’ for ‘Brass, Fibre glass reinforced plastic (FRP), HDPE, Stainless steel’.

[Page 6, Table 1, col 3, Sl No. (iii)] — Substitute ‘Brass, Plastic, Stainless steel’ for ‘Brass, Fibre glass reinforced plastic (FRP), HDPE, Stainless steel’.

[Page 6, Table 1, col 3, Sl No. (iv) (see also Amendment No. 1)] — Substitute ‘Brass, Plastic with brass lining, Engineering Plastic, Stainless steel’ for ‘Brass, plastics with brass lining’.

[Page 6, Table 1, col 3, Sl No. (v)] — Substitute ‘Brass, Engineering Plastic, Stainless steel’ for ‘Brass, Engineering plastic, Plastic with brass lining’.

[Page 6, Table 1, col 3, Sl No. (vi) (see also Amendment No. 1)] — Substitute ‘Brass, Engineering Plastic, Stainless steel’ for ‘Brass’.

[Page 6, Table 1, col 3, Sl No. (vii)] — Substitute ‘Brass, Engineering Plastic, Stainless steel’ for ‘Brass, Engineering plastic, Aluminium alloy’.

Amend No. 2 to IS 3906 : 1995

[Page 6, Table 1, col 3, Sl No. (viii)] — Substitute 'Plastic' for 'Engineering plastic'.

[Page 6, Table 1, col 3, Sl No. (ix)] — Substitute 'Brass, Stainless steel' for 'Brass'.

[Page 6, Table 1, col 3, Sl No. (x)] — Substitute 'Steel, Engineering Plastic' for 'Steel'.

[Page 6, Table 1, col 3, Sl No. (xii)] — Substitute 'Stainless steel, Brass, Plastic' for 'Stainless steel, Plastics'.

[Page 6, Table 1, col 3, Sl No. (xvi) (see also Amendment No. 1)] — Substitute 'Plastic' for 'Wood, Engineering Plastics, Chrome tanned leather'.

[Page 6, Table 1, col 3, Sl No. (xvii) (see also Amendment No. 1)] — Substitute 'Chrome tanned leather, PVC' for 'Synthetic rubber, PVC'.

[Page 6, Table 1, col 3, Sl No. (xviii)] — Substitute 'Brass, Stainless steel, plastic' for 'Brass'.

[Page 6, Table 1, col 3, Sl No. (xxi)] — Substitute 'Synthetic rubber, PVC, Fibre' for 'Synthetic rubber, PVC, Fibre, leather'.

[Page 6, Table 1, col 3, Sl No. (xxii)] — Substitute 'Brass, Stainless steel, Engineering Plastic' for 'Brass, Engineering plastics'.

[Page 6, Table 1, col 3, Sl No. (xxiii)] — Substitute 'Brass, Stainless steel, Engineering Plastic' for 'Brass, Stainless steel, PVC'.

[Page 6, Table 1, col 3, Sl No. (xxiv)] — Substitute 'Steel, Plastic' for 'Steel, Engineering plastic, FRP'.

[Page 6, Table 1, col 3, Sl No. (xxv)] — Substitute 'Steel, Engineering Plastic' for 'Steel, Galvanized plain steel, Foam rubber'.

[Page 6, Table 1, col 3, Sl No. (xxvi)] — Substitute 'Foam rubber, foam plastic' for 'Foam plastic, Rubberized coir foam'.

Amend No. 2 to IS 3906 : 1995

(Page 6, Table 1) — Insert the following Note:

‘3 The Engineering plastics used for manufacturing various components as given in Table 1 shall be copolymer plastics or reinforced polypropylene.’

(Page 6, clause 6.7, line 2) — Substitute ‘6 mm’ for ‘13 mm’.

(Page 7, clause 6.8) — Substitute ‘Metallic Threaded Connection’ for ‘Threaded Connection’ wherever appears.

(Page 7, clause 6.12, line 2) — Substitute ‘110 cm’ for ‘one metre’.

(Page 8, clause 7.3.4) — Insert the following new clause after 7.3.4:

‘7.3.5 Each sprayer shall be provided with a set of mask, hand gloves and safety goggles.’

(FAD 21)

Reprography Unit, BIS, New Delhi, India

Indian Standard

CROP PROTECTION EQUIPMENT — HAND-OPERATED KNAPSACK SPRAYER-R, PISTON TYPE—SPECIFICATION

(*Fourth Revision*)

1 SCOPE

1.1 This standard prescribes material, performance, constructional and other requirements of hand-operated knapsack sprayer, piston type, used for spraying pesticides.

1.1.1 The sprayers of this type are normally used with an average working pressure of 300 kPa (100 kPa = 1.019 7 kgf/cm² = 1 bar).

2 REFERENCES

The following Indian Standards are necessary adjuncts to this standard:

IS No.	Title
292 : 1983	Leaded brass ingots and casting (<i>second revision</i>)
2643 (Part 1) : 1975	Dimensions for pipe threads for fastening purposes : Part 1 Basic profile and dimensions (<i>first revision</i>)
3652 : 1995	Crop protection equipment — foot sprayers (<i>fourth revision</i>)
7201 (Part 1) : 1987	Methods of sampling for agricultural machinery and equipment : Part 1 Hand tools and hand-operated/ animal-drawn equipment (<i>first revision</i>)
8480 : 1977	Glossary of terms related to crop protection equipment
10134 : 1994	Method of tests for manually operated sprayers (<i>first revision</i>)
11429 : 1985	Methods for calibration of sprayers

3 TERMINOLOGY

3.0 For the purpose of this standard, the following definitions in addition to those given in IS 8480 : 1977 shall apply (see *also* Fig. 1, 2, 3 and 4).

3.1 Agitator

A device for keeping the pesticidal material stirred in the tank.

3.2 Cycle

One up and one down stroke.

3.3 Filling Hole

A hole provided for filling liquid in the tank.

3.4 Gasket

A compressible insert placed between two surfaces to obtain a liquid- or gas- tight sealing.

3.5 Guide

A component for guiding the movement of the piston rod or the pressure chamber.

3.6 Handle

A rod or tube, one end of which is attached to the handle pivot while the other end carries the grip.

3.7 Handle Pivot

A pivot on the skirt/stand to mount the handle.

3.8 Hose Connection

A device to connect the delivery hose with the discharge outlet and the cut-off device.

3.9 Knapsack Sprayer

A sprayer which can be mounted on the back of an operator for spraying. It is also known as backpack sprayer.

3.10 Mass

The mass of the sprayer without any liquid in the tank and without a discharge line (that is, hose, cut-off device, lance and nozzle).

3.11 Connecting Lever

A lever, connecting the handle with the piston rod or the pressure chamber.

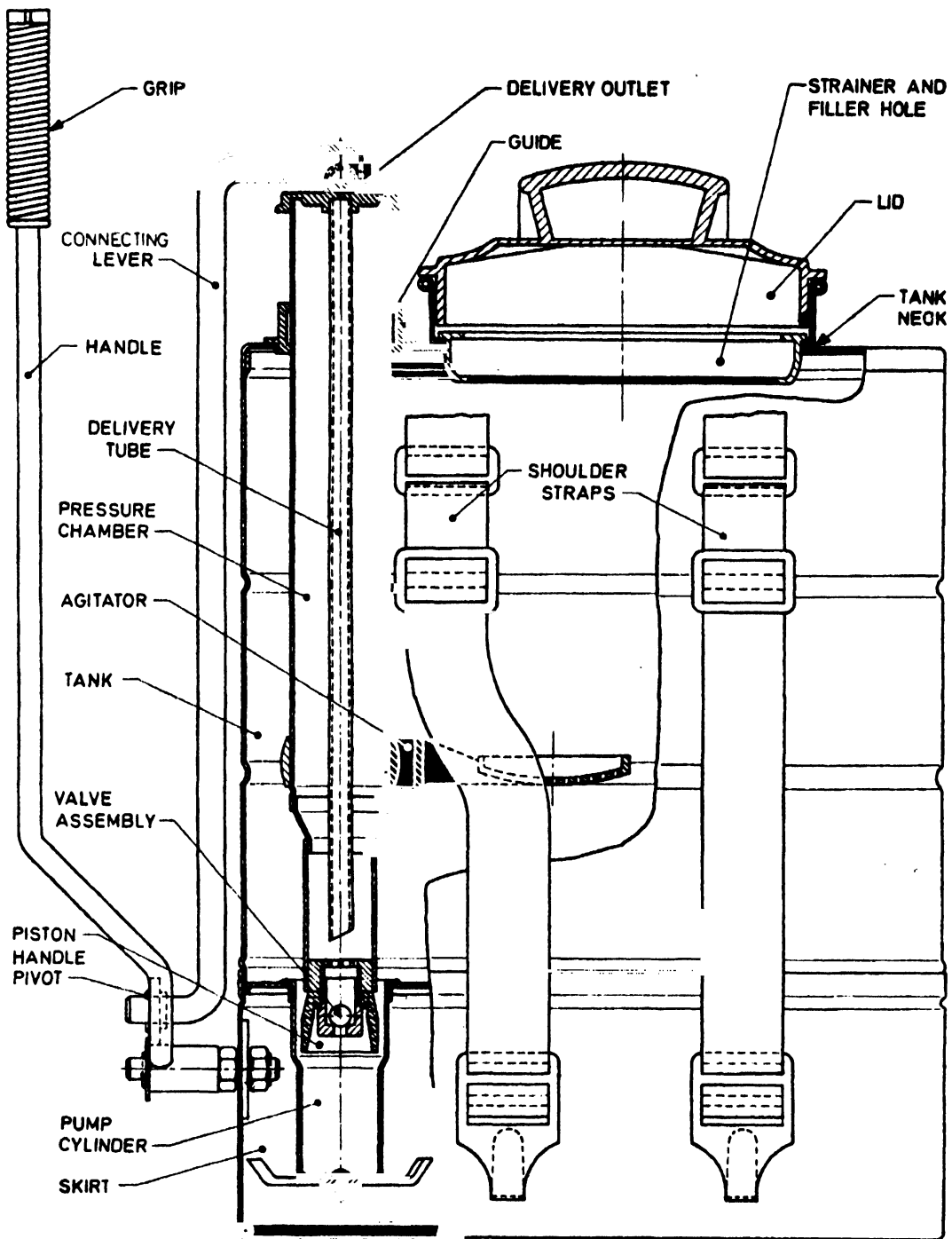


FIG. 1 KNAPSACK SPRAYER, PUMP ASSEMBLY INSIDE TANK

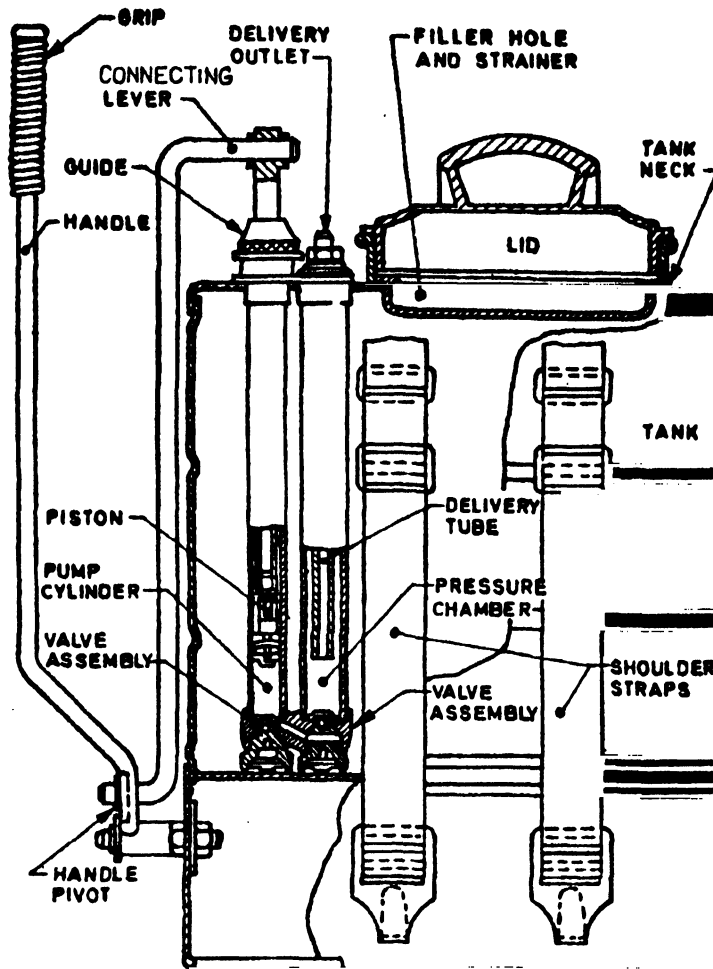


FIG. 2 KNAPSACK SPRAYER, PUMP ASSEMBLY INSIDE TANK

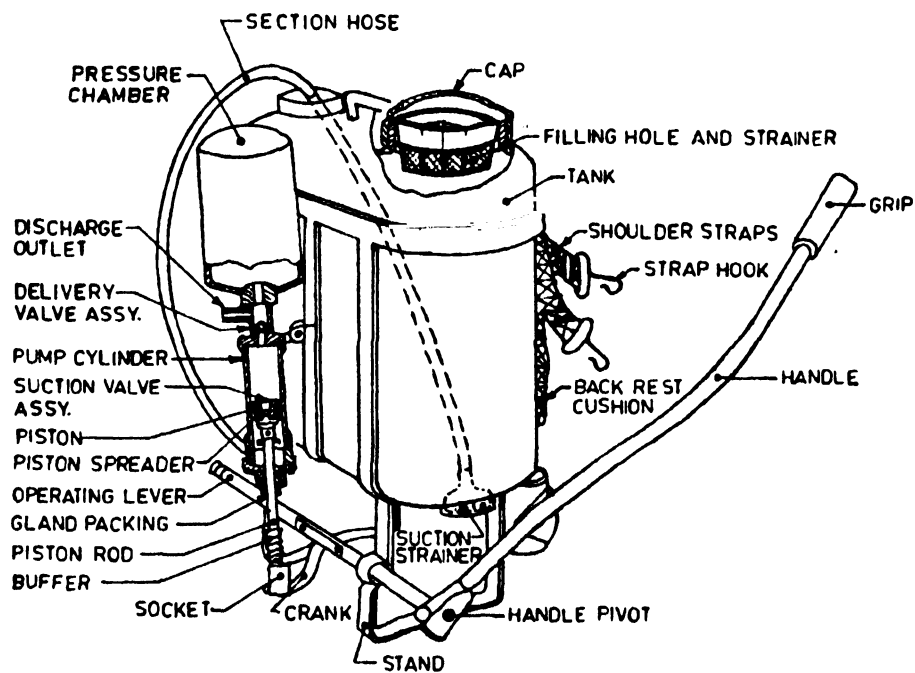


FIG. 3 KNAPSACK SPRAYER, PUMP ASSEMBLY OUTSIDE TANK

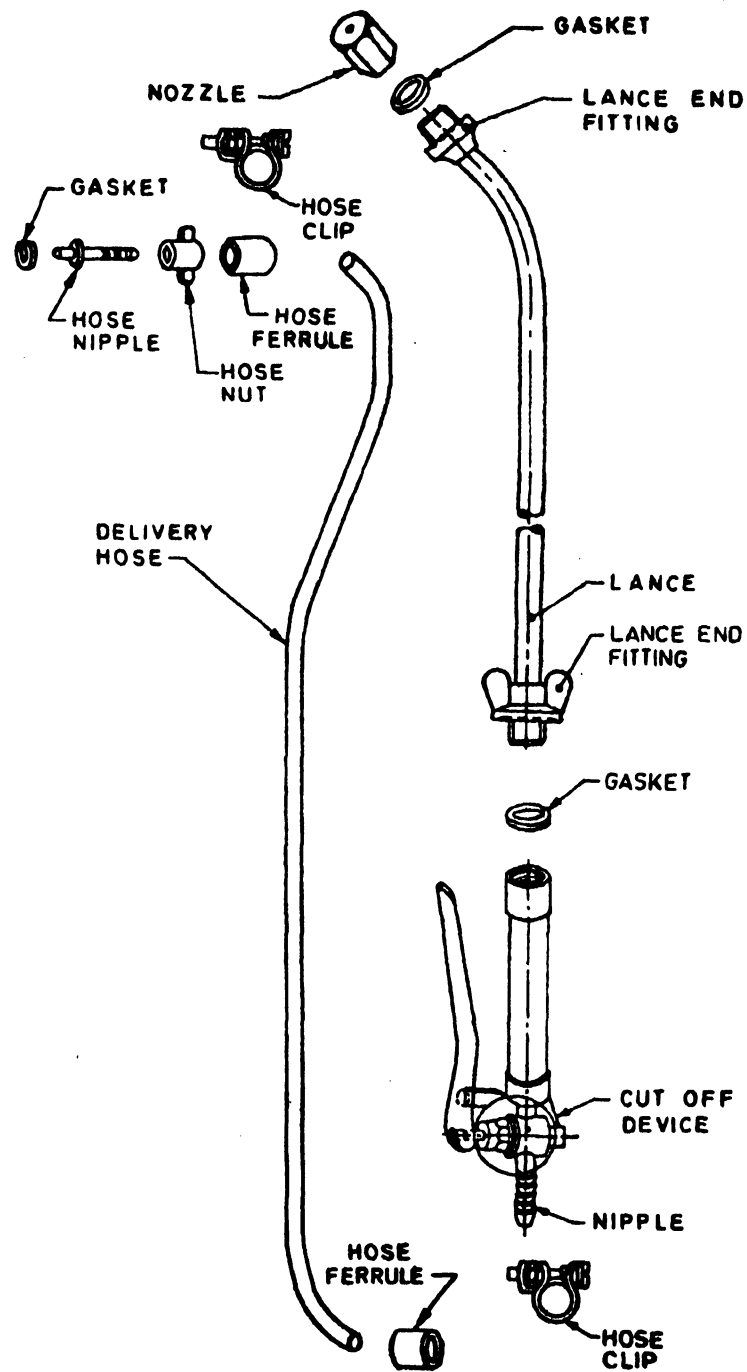


FIG. 4 DISCHARGE LINE OF SPRAYER

3.12 Piston

A component for creating pressure or suction and pressure.

3.13 Piston Displacement

The volume displaced by the piston during one stroke.

3.14 Piston Rod

A rod or tube to help the movement of the piston.

3.15 Piston Type Sprayer

A sprayer in which a piston type pump is used for creating pressure or suction and pressure.

3.16 Pressure Chamber

A component to even out the fluctuations of the liquid pressure and induce uniform flow of the liquid.

NOTE — In some design, the piston rod is not provided. In such cases, pressure chamber helps in the movement of the piston.

3.17 Pump Cylinder

A component for guiding the movement of the piston.

3.18 Skirt Stand

A support to prevent the bottom of the tank from damage.

3.19 Spreader

A component for holding the piston in its shape and position.

3.20 Stroke

The maximum travel of the piston rod or the pressure chamber in one direction when the handle move from a maximum of 35° above to a maximum of 35° below (that is, total of 70° or less) of a horizontal plane passing through the centre line of the handle pivot.

3.21 Tank

A container for holding the liquid.

3.22 Tank Capacity

The volume of the tank when liquid is filled to its neck level, the tank being duly equipped with all its internal mountings.

3.23 Valve Assembly

A device provided to check or to allow the flow of the fluid.

3.24 Volumetric Efficiency

The quotient of the division of the actual volume of the spray fluid discharged in one

stroke by the piston displacement, expressed as percent.

4 MATERIAL

4.1 The material of construction of various components of the sprayer shall be selected from col 3 of Table 1. The material other than brass casting may conform to the relevant Indian Standards, however brass casting components shall conform to the chemical composition as specified in IS 292 : 1983 (Grade to be declared by the manufacturer). Some of the relevant Indian Standards are given in Annex B of IS 3652 : 1995 for guidance.

4.2 The material for spray lance, nozzle, cut-off device and its components shall be as given in Table 1 of IS 3652 : 1995.

4.3 All metallic parts coming in contact with the pesticides should preferably be of the same material to minimize electrolytic corrosion.

4.4 The material for various parts shall be declared by the manufacturer in the manual (see 7.1).

5 PERFORMANCE REQUIREMENTS**5.1 Discharge Rate**

When tested in accordance with the method given in 6.1.3 of IS 10134 : 1994, the pump shall be capable of discharging a minimum of 500 ml of water per minute.

5.2 Volumetric Efficiency

When tested in accordance with the method given in 6.2 of IS 10134 : 1994, the volumetric efficiency shall be not less than 80 percent.

6 CONSTRUCTIONAL REQUIREMENTS**6.1 Tank**

The tank capacity (see 3.22) shall be 10, 13 or 16 litres with a tolerance of ± 0.5 litre.

6.1.1 The thickness of the sheet used in manufacture of brass tank shall be 0.63 mm \pm 0.03 mm.

6.1.2 The tank, when filled up to its neck level with water, shall not show any sign of leakage and shall not buckle.

6.2 Skirt/Stand

The tank shall be provided with a skirt/stand which shall project a minimum of 12 mm beyond the lowest portion of the bottom of the tank.

6.3 Straps

Two straps of not less than 800 mm when adjusted to maximum possible length and 38 mm

Table 1 Materials for Construction of Various Components
(Clause 4.1)

Sl No.)	Component (2)	Material (3)
i)	Tank	Brass Fibre glass reinforced plastic (FRP) HDPE Stainless steel
ii)	Lid or cap	do
iii)	Pressure chamber	do
iv)	Pump cylinder	Brass, plastics with brass lining
v)	Guide	Brass, Engineering plastic, Plastic with brass lining
vi)	Hose nut	Brass
vii)	Hose nipple	Brass Engineering plastic Aluminium alloy
viii)	Agitator	Engineering plastic
ix)	Piston rod	Brass
x)	Crank	Steel
xi)	Hose ferrule/clip	do
xii)	Strainer	Stainless steel, Plastics
xiii)	Handle	Steel
xiv)	Operating lever	do
xv)	Handle pivot	do
xvi)	Handle grip	Wood Engineering plastics Chrome tanned leather
xvii)	Piston	Synthetic rubber PVC
xviii)	Spreader	Brass
xix)	Strap	Woven web cotton/synthetic yarn
xx)	Hose	PVC
xxi)	Gasket	Synthetic rubber PVC Fibre Leather
xxii)	Valve seat	Brass Engineering plastics
xxiii)	Valve	Brass Stainless steel PVC
xxiv)	Skirt/stand	Steel Engineering plastic FRP
xxv)	Strap buckle	Steel Galvanized plain steel Foam rubber
xxvi)	Cushion	Foam plastic Rubberized coir foam

NOTES

- 1 All the components mentioned above may not be present in a particular sprayer.
- 2 The components other than those listed in the table and coming in direct contact with the pesticides shall be of corrosion resistance material.

in width shall be provided in order to help carriage of the sprayer. Provision for adjustment of the length of each strap shall also be provided.

6.3.1 The straps and their assembly shall withstand the test prescribed in 7.3 of IS 10134 : 1994.

6.4 Filling Hole

A filling hole of 90 mm minimum diameter if circular or in minor axis, if oval, shall be provided on the top of the tank.

6.4.1 The hole shall be covered with a tightly fitted cap or lid. It shall withstand the test given under 6.4.1.1.

6.4.1.1 The tank is filled with water to its neck level and the cap is tightly fitted. The tank is tilted to 15° from vertical position. The water shall not come out from the cap.

NOTE — The water coming from the bleeding hole of the cap shall not be considered as leakage.

6.4.2 Strainer

A removable strainer on the filling hole or a separate filling funnel with strainer shall be provided to filter the liquid while filling in the tank. The average size of any side or diameter of the strainer apertures shall be not more than 625 µm.

NOTE — For measuring the size of apertures, select 10 consecutive apertures in the strainer and measure each side or diameter as the case may be. Average the measured values and report.

6.5 Pressure Chamber

The pressure chamber shall have a minimum effective capacity of 8 times the piston displacement (see 3.13).

6.5.1 The pressure chamber shall be able to withstand the test prescribed in 7.1 of IS 10134 : 1994.

6.6 Pump Cylinder

The inner diameter of the pump cylinder shall be not more than 55 mm. The inner diameter of the pump shall be measured below the bell-mouth of the cylinder.

6.6.1 The pump cylinder shall be able to withstand the test prescribed in 7.1 of IS 10134 : 1994.

NOTE — In the pumps having suction stroke the test as given in 6.6.1 would be carried.

6.7 Piston

The height of the straight portion of the piston shall be 13 mm minimum. In case the piston is made out of synthetic rubber, it shall withstand the test prescribed in 7.1 of IS 10134 : 1994.

6.7.1 Spreader

The spreader if provided shall be able to hold the piston in its position without distortion against the wall of the pump cylinder.

6.7.2 The highest and the lowest position of the piston shall be possible to attain when the handle moves 35° above and 35° below (that is, total of 70° or less) the horizontal plane passing through the central line of the handle pivot respectively.

6.8 Threaded Connection

All threaded connection on sprayer and its component shall conform to the requirements given in 6.5 of IS 3652 : 1995.

6.9 Operating Lever, Handle and Piston Rod

The operating lever, handle and piston rod, if provided shall be able to withstand the test prescribed in 7.6 of IS 10134 : 1994.

6.9.1 The handle shall be provided with a grip.

6.10 Discharge Outlet

The discharge outlet shall be of nipple type or threaded type. The length of the nipple shall be not less than 20 mm.

6.11 Gaskets

The gaskets of synthetic rubber, wherever provided, shall withstand the test prescribed in 7.4 of IS 10134 : 1994.

6.12 Delivery Hose

A delivery hose of suitable diameter and preferably one metre in length shall be provided as agreed to between the purchaser and the supplier. The hose shall be connected with the discharge outlet and the cut-off device through hose connections. In case suction hose is provided, shall withstand pneumatic test as given in 7.1.1 of IS 10134 : 1994.

6.12.1 Hose Connections

The hose connections for threaded type and nipple type connections shall be of nut-nipple and clamp type, and clamp type respectively. The clamp shall be in the form of ferrule or clip.

6.12.2 The hose and hose connection shall withstand the test prescribed in 7.2 of IS 10134 : 1994.

6.13 Cut-Off Device and Lance

The cut-off device and lance shall be provided and shall conform to the requirements given in Annex C and Annex D of IS 3652 : 1995 respectively.

NOTE — In case the spray lance and cut-off device of a type other than that specified in Annex C and Annex D of IS 3652 : 1995 are required by the purchaser, for the special purpose, its requirements shall be as agreed to between the purchaser and the supplier.

6.14 Nozzles

Unless otherwise specified by the purchaser, the nozzle shall conform to the requirements as given in Annex F of IS 3652 : 1995.

6.15 Lifting Arrangement

A suitable arrangement other than the shoulder strap shall be provided to facilitate lifting of the sprayer for shifting from one place to another.

6.16 Mass

The mass (*see* 3.10) of the sprayer shall be not more than 8.0 kg.

6.17 Endurance

The sprayer shall withstand the test prescribed in 8.1 of IS 10134 : 1994.

7 OTHER REQUIREMENTS**7.1 Manual**

The manual shall meet the requirements given in 7.1 of IS 3652 : 1995.

7.2 Spare Parts

Spare parts shall meet the requirements given in 7.2 of IS 3652 : 1995.

7.3 Optional Items

At the option of the purchaser, the following items, with the requirements indicated against each, shall be provided in the sprayer. Any other optional items required by the purchaser shall be supplied, the requirements for the same shall be as agreed to between the purchaser and the supplier.

7.3.1 Strap Cushion

A cushion of minimum 40 mm width and 20 mm thickness may be provided with each strap at least on the portion that rests on the shoulder of the operator. The cushion, if provided, shall be covered with suitable covering material, such as canvas, rexine and PVC or plastic-coated fabrics.

7.3.2 Back Rest Cushion

A back rest cushion may be provided. The cushion, if provided, shall be covered with suitable covering material, such as canvas, rexine and PVC or plastic-coated fabrics.

7.3.3 Agitator

7.3.4 Choice of Operation

The sprayer may be supplied with the arrangement for operating lever to be fixed either on right or on left side.

8 WORKMANSHIP AND FINISH

8.1 The components of the sprayer shall have a smooth finish and shall be free from pits, burrs, sharp edges and other defects that may be detrimental to their use.

8.2 The exposed mild steel parts shall have a protective coating to prevent surface deterioration. The steel used for the hose ferrule/clip shall be plated with cadmium, zinc or nickel-chrome. Exposed brass parts may be given a suitable protective finish with clear transparent lacquer.

9 MARKING AND PACKING

9.1 Marking

Each sprayer shall be marked with the following particulars:

- a) Manufacturer's name or recognized trade-mark,
- b) Batch or serial number, and
- c) Tank nominal capacity.

9.2 BIS Certification Marking

The product may also be marked with the Standard Mark.

9.2.1 The use of the Standard Mark is governed by the provisions of the *Bureau of Indian Standards Act, 1986* and the Rules and Regulations made thereunder. The details of conditions under which the licence for the use of Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

9.3 Packing

Each sprayer shall be packed, as agreed to between the purchaser and the supplier, for safe handling in transit.

10 SAMPLING FOR LOT ACCEPTANCE

10.1 Unless otherwise agreed to between the purchaser and the supplier, sampling of the sprayers for lot acceptance shall be done in accordance with 3 of IS 7201 (Part 1) : 1987.

11 METHODS OF TESTS

11.1 The requirements of this specification shall be tested in accordance with the relevant clauses of IS 10134 : 1994.

11.2 Test for various requirements given in the order below shall be followed by the testing authorities:

- a) Dimensional and visual check — see 6.1.1, 6.2, 6.3, 6.4, 6.4.2, 6.8, 6.9.1, 6.10, 6.12, 6.12.1, 6.13, 6.14, 6.15, 7 and 9.1;
- b) Mass — see 6.16;
- c) Tank capacity — see 6.1 and 6.1.2;
- d) Filling hole — see 6.4.1;
- e) Piston position limits — see 6.7.2;
- f) Discharge rate — 5.1;
- g) Volumetric efficiency — see 5.2;
- h) Endurance test — see 6.17;
- j) Strap drop test — see 6.3.1;
- k) Dimensional and visual check — see 6.6, 6.7, 6.7.1 and 8;
- m) Pressure chamber — see 6.5 and 6.5.1;
- n) Pump cylinder — see 6.6.1;
- p) Hose and hose connection test — see 6.12.2;
- q) Operating lever, handle and piston rod test — see 6.9;
- r) Test for nozzle — see 6.14;
- s) Test for lance — see 6.13;
- t) Test for cut-off device — see 6.13; and
- u) Test for gaskets and piston — see 6.11 and 6.7.

NOTES

1 The test for hose and hose connection, cut-off device and lance may be conducted at one time.

2 The gasket and piston test shall be conducted with a new set of gaskets and piston provided with the sprayer.

ANNEX A
(*Foreword*)

SPECIFICATION SHEET

- | | |
|---|---|
| 1. Name of the purchaser. | 6. Type of nozzle (<i>see 6.14</i>). |
| 2. Preference of material for components
(<i>see 4.1</i> and Table 1). | 7. Length of delivery hose (<i>see 6.12</i>). |
| 3. Tank capacity (<i>see 6.1</i>). | 8. Filling funnel (<i>see 6.4.2</i>). |
| 4. Type of the cut-off device (<i>see 6.13</i>). | 9. Choice of operation (<i>see 7.3.4</i>). |
| 5. Type of lance (<i>see 6.13</i>). | 10. Spare parts (<i>see 7.2</i>). |
| | 11. Optional items (<i>see 7.3</i>). |

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Review of Indian Standards

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